Whirlpool CORPORATION

TECHNICAL EDUCATION

INDUCTION COOKTOP

Kitchen Aid	Jenn-Air	Whirlpool
KICU500X	JIC4430X	GIC3051X
KICU509X	JIC4536X	
KICU569X		

JOB AID W10346831

FORWARD

This Induction Cooktop Job Aid (W10346831), provides the In-Home Service Professional with information on the installation, operation, and service of the Induction Cooktop. For specific information on the model being serviced, refer to the “Use and Care Guide,” or “Wiring Diagram” provided with the cooktop.

The Wiring Diagrams used in this Job Aid are typical and should be used for training purposes only. Always use the Wiring Diagram supplied with the product when servicing the cooktop.

GOALS AND OBJECTIVES

The goal of this Job Aid is to provide information that will enable the In-Home Service Professional to properly diagnose malfunctions and repair the Induction Cooktop.

The objectives of this Job Aid are to:

- Understand and follow proper safety precautions.
- Successfully troubleshoot and diagnose malfunctions.
- Successfully perform necessary repairs.
- Successfully return the cooktop to its proper operational status.

WHIRLPOOL CORPORATION assumes no responsibility for any repairs made on our products by anyone other than authorized In-Home Service Professionals.

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— NOTES —

GENERAL

Cooktop Safety

Your safety and the safety of others are very important.

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.

This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word “DANGER” or “WARNING.” These words mean:

⚠DANGER — **You can be killed or seriously injured if you don't immediately follow instructions.**

⚠WARNING — **You can be killed or seriously injured if you don't follow instructions.**

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

Model & Serial Number Designations

MODEL NUMBER | **K** | **IC** | **U** | **50** | **9** | **X** | **SS** | **0**

PRODUCT GROUP
K = KITCHENAID BRAND

PRODUCT IDENTIFICATION
EC = ELECTRIC COOKTOP
GC = GAS COOKTOP
IC = INDUCTION COOKTOP

MERCHANDISING SCHEME
C = CERAMIC GLASS
C = ARCHITECT (GAS)
D = DOWNDRAFT VENT
K = STANDARD KITCHENAID
P = COMMERCIAL STYLE
S = (GAS)
U = ULTIMA

CAPACITY / SIZE / SERIES / CONFIGURATION

1ST POSITION	*2ND POSITION*
0 = TEMPERED GLASS	0 = 30″ WIDE
1 = STAINLESS STEEL	5 = 15″ WIDE
4 = COMMERCIAL STYLE	6 = 36″ WIDE
5 = CERAMIC GLASS	8 = 48″ WIDE
7 = STAINLESS STEEL W/CLEAR COAT	

FEATURE CODE
0 = STANDARD ELEMENTS / BURNERS
1 = RADIANT ELEMENTS
2 = DUAL ELEMENTS OR SEALED BURNERS W/GRILL
6 = 5 BURNERS / ELEMENTS
7 = HALOGEN ELEMENTS / OR 6 BURNERS
8 = TOUCH CONTROLS
9 = INDUCTION

YEAR OF INTRODUCTION
X = 2010

COLOR CODE
SS= STAINLESS STEEL

ENGINEERING CHANGE (0, 1, 2, ETC.)

SERIAL NUMBER | **DP** | **0** | **24** | **01234**

DIVISION RESPONSIBILITY
DP = CLEVELAND

YEAR OF PRODUCTION
0 = 2010

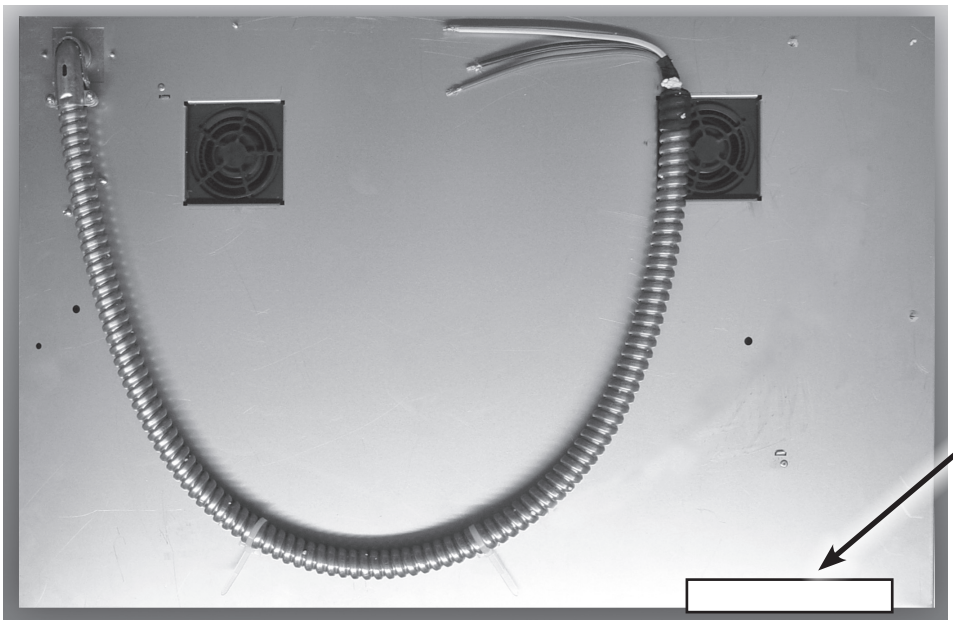
WEEK OF PRODUCTION
24 = 24TH WEEK

PRODUCT SEQUENCE NUMBER

Model & Serial Number Label And Tech Sheet Locations

The Model/Serial Number label and Tech Sheet locations are shown below.

Tech Sheet Location (On Bottom Of Cooktop In Plastic Bag))



Model & Serial Number Label Location

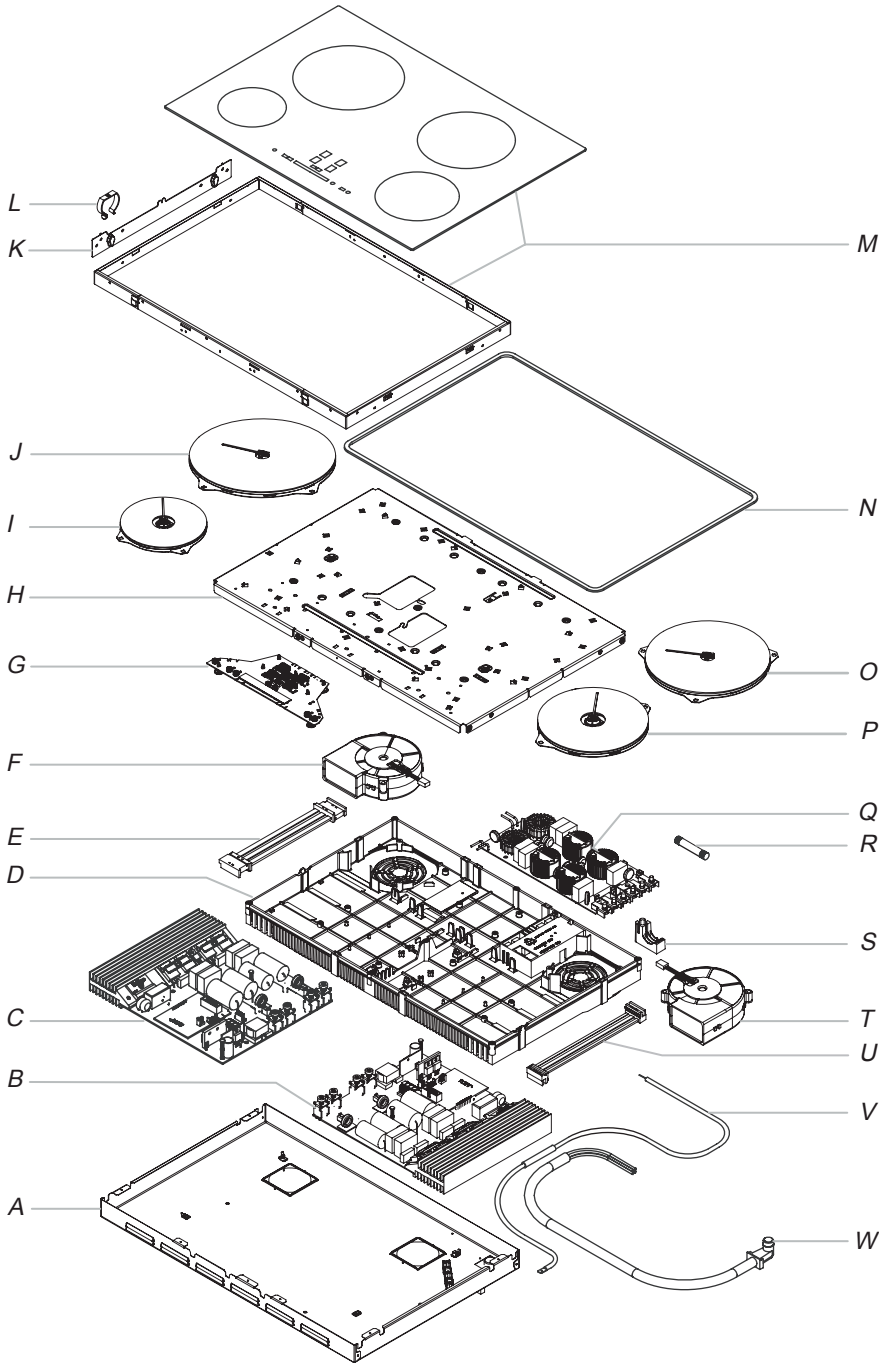
Specifications

New Model	KICU500X	KICU509X	KICU569X
Color	BL/SS (BL has beveled edge)	BL/SS (BL has beveled edge)	BL/SS (BL has beveled edge)
Cooktop Width	30"	30"	36"
Cooktop Material	Ceran	Ceran	Ceran
Number of Elements	4	4	5
Left Front Type	6" Single	7" Bridge	7" Bridge
Left Front Power	1800 W	2500 W	2500 W
Left Rear Type	9" Single (10" Graphic)	7" Bridge	7" Bridge
Left Rear Power	3200 W		
Right Front Type	7" Single	10/8" Dual (11/9" Graphic)	7" Bridge
Right Front Power	2500 W	3700 W	2500 W
Right Rear Type	8" Single (9" Graphic)		7" Bridge
Right Rear Power	3000 W		
Central Front Type		6" Single	11/8" Dual (12/9" Graphic)
Central Rear Power		1800 W	5000 W Power Boost
Control Type	G8 Touch	G8 Touch	G8 touch
Control Location	Center Front	Cluster in Right Front	Cluster in Central Front
Knob	N/A	N/A	N/A
Features	One Timer	One Timer	One Timer
	Booster on All Elements	Boosters on each element (except 7" bridge)	Boosters on each element (except 7" bridge)
	Pause Function		
	Control Lockout	Quick Function Key: Melting	Quick Function Key: Melting
	Quick Function Key: Melting	Quick Function Key: Simmering	Quick Function Key: Simmering
	Quick Function Key: Simmering	Control Lockout	Control Lockout
		Pause Function	Pause Function
		Control Lockout	Control Lockout
		All. Extruded frame	All. Extruded frame

Specifications (continued)

New Model	JIC4430X	JIC4536X	GIC1306X
Color		B/S (Black has beveled edge)	B
Cooktop Width	30"	36"	30"
Cooktop Material	Ceran	Ceran	Ceran
Number of Elements	4	5	4
Left Front Type	7" Bridge	7" Bridge	6" Single
Left Front Power	2500 W	2500 W	1800 W
Left Rear Type	7" Bridge	7" Bridge	9" Single (10" Graphic)
Left Rear Power			3200 W
Right Front Type	10/8" Dual (11/9" Graphic)	7" Bridge	7" Single
Right Front Power	3700 W	2500 W	2500 W
Right Rear Type		7" Bridge	8" Single (9" Graphic)
Right Rear Power			3000 W
Central Front Type	6" Single	11/8" Dual (12/9" Graphic)	
Central Rear Power	1800 W	5000 W Power Boost	
Control Type	G8 Touch	G8 Touch	G8 Touch
Control Location	Cluster in Right Front	Cluster in Right Front	Center Front
Knob	N/A	N/A	N/A
Features	Timers for all elements	Timers for all elements	One Timer
	Boosters on each element (except 7" bridge)	Boosters on each element (except 7" bridge)	Booster on One Element
			Control Lockout
	6th Sense	6th Sense	Pause Function
	Control Lockout	Control Lockout	Quick Function Key: Simmering
	Pause Function	Pause Function	
	Multi Function Key: Simmer,	Multi Function Key: Simmer,	
	Melting, Keeping Warm	Melting, Keeping Warm	
	All. Extruded frame	All. Extruded frame	

Induction Cooktop Components



A. Cooktop base
B. Power control board right
C. Power control board left
D. Plastic housing
E. User interface harness
F. Fan
G. User interface
H. Aluminum plate
I. Coil (6" [15.2 cm])
J. Coil (9" [22.9 cm])
K. Mounting bracket
L. Mounting clips (4)
M. Assembly glass
N. Frame
O. Coil (8" [20.3 cm])
P. Coil (6" [15.2 cm])
Q. EMI - Filter board
R. Fuse
S. Harness fixing
T. Fan
U. User Interface harness
V. Thermofuse harness (250°F [121°C]) - one on yellow cable and one on black cable
W. Power cord

INSTALLATION INFORMATION

Installation Instructions

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

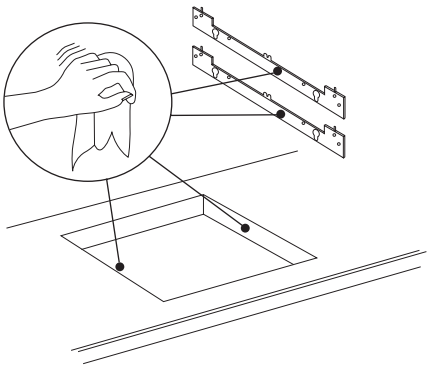
Failure to do so can result in death or electrical shock.

1. Disconnect power or unplug the cooktop.

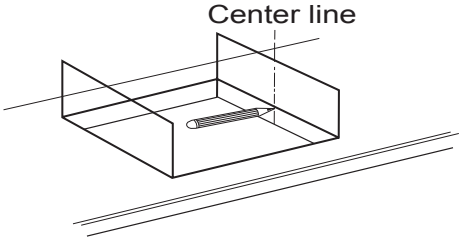
NOTE: Kit Part Number W10310006 is required for installing the cooktop into a marble countertop. See the “Assistance or Service” section of the Use and Care Guide for information on ordering.

To Install Brackets into Marble Countertop:

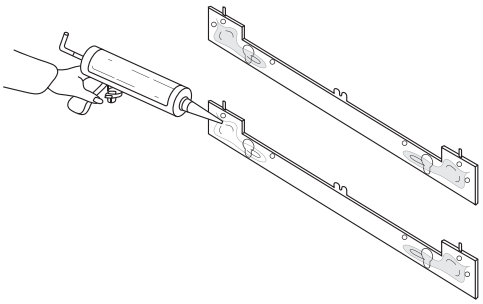
2. Clean the brackets and cooktop cutout of any dust and debris.



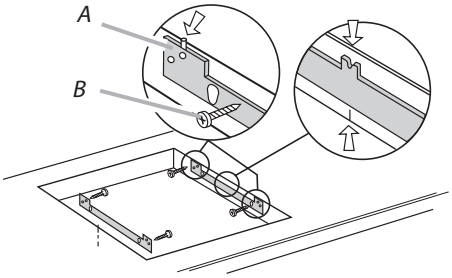
3. Measure the center line of the vertical sides of the cooktop cutout..



4. Apply the adhesive provided in the kit to the back side of the brackets.

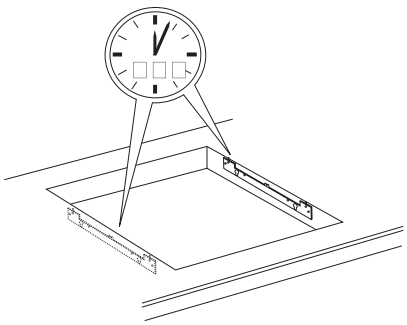


5. Position brackets in the center of the vertical centerline and align the upper edge of the brackets so that they are flush with the countertop.



A. Bracket
B. Screw

6. Push the brackets firmly onto each side of the cooktop cutout and wait 1-hour for adhesive to dry.



Installation Instructions (continued)

To Install Brackets into Wood Countertop:

⚠WARNING

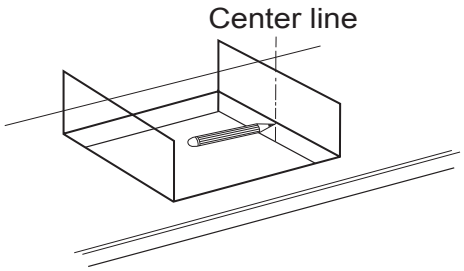
Electrical Shock Hazard

Disconnect power before servicing.

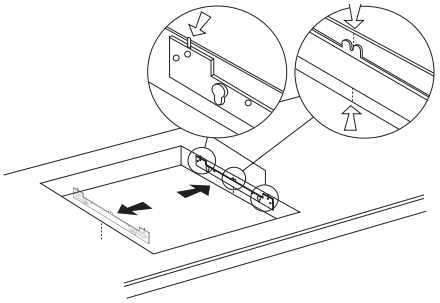
Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Disconnect power or unplug the cooktop.
2. Measure the center line of the vertical sides of the cooktop cutout.



3. Position brackets in the center of the vertical centerline and align the upper edge of the brackets so that they are flush with the countertop.



4. Attach the brackets in the cutout with the screws provided.

Install Cooktop

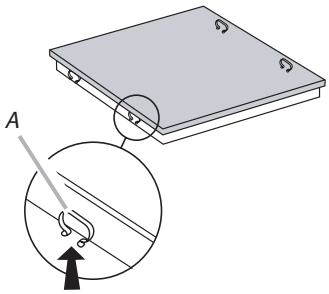
⚠WARNING

Excessive Weight Hazard

Use two or more people to move and install cooktop.

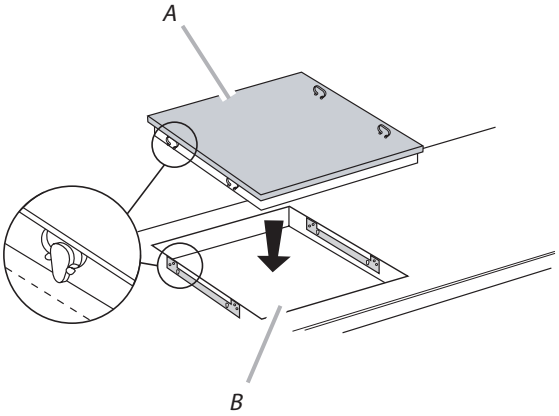
Failure to do so can result in back or other injury.

1. Using 2 or more people, lower the cook top into the cutout making sure the clips on each side of the cooktop line up with the brackets in the cutout.



A. Clip

2. Push down on cooktop to snap the cook top clips onto the brackets installed in the cutout.



A. Cooktop
B. Cooktop cutout

Installation Instructions (continued)

Make Electrical Connection

⚠WARNING

Electrical Shock Hazard

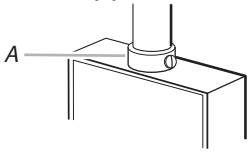
Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

This cooktop is manufactured with a frame-connected, green (or bare) ground wire.

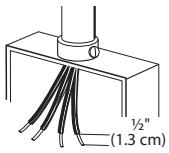
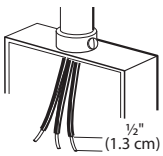
1. Disconnect power.
2. Remove junction box cover if it is present.
3. Connect the flexible cable conduit from the cooktop to the junction box using a UL listed or CSA approved conduit connector.



A. UL listed or CSA approved conduit connector

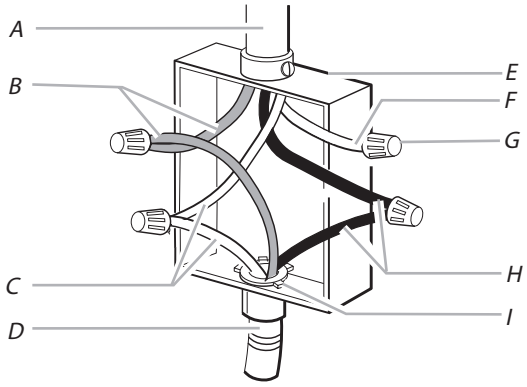
4. Tighten screws on conduit connector if present.
5. See “Electrical Connection Options Chart” to complete installation for your type of electrical connection.

Make Electrical Connection

If your home has:	Go to Section:
4-wire 	4-Wire Cable from Home Power Supply
3-wire 	3-Wire Cable from Home Power Supply

4-Wire Cable from Home Power Supply

IMPORTANT: Use the 4-wire cable from home power supply in the U.S. where local codes do not allow grounding through neutral, New Branch circuit installations (1996 NEC), mobile homes and recreational vehicles, new construction, and in Canada.



A. Cable from home power supply
B. Red wires
C. Green (or bare) ground wires
D. 3-Wire cable from cooktop
E. Junction box
F. White wire (from home power supply)
G. UL listed wire connector
H. Black wires
I. UL listed or CSA approved conduit connector with wire bushing

1. Connect the 2 red wires (B) together using a UL listed wire connector.
2. Connect the green (or bare) ground wire (C) from the cooktop cable to the green (or bare) ground wire (in the junction box) us ing a UL listed wire connector.
3. Put a UL listed wire connector on the end of the white wire (F).

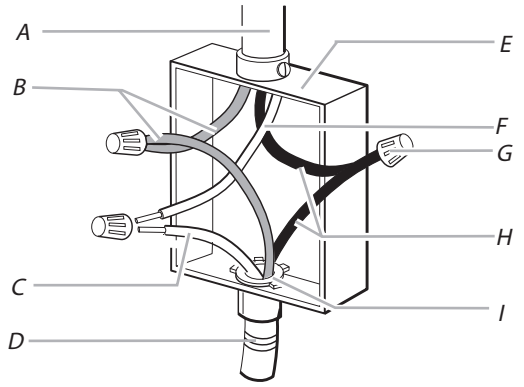
NOTE: Do not connect the green (or bare) ground wire to the neutral (white) wire in the junction box.

4. Connect the 2 black wires (H) together us ing a UL listed wire connector.
5. Install junction box cover.

Installation Instructions (continued)

3-Wire Cable from Home Power Supply - U.S. Only

IMPORTANT: Use the 3-wire cable from home power supply where local codes permit a 3-wire connection.



A. Cable from home power supply
B. Red wires
C. Green (or bare) ground wire from cooktop
D. 3-wire cable (from cooktop)
E. Junction box
F. White wire (from home power supply)
G. UL listed wire connector
H. Black wires
I. UL listed or CSA approved conduit connector with wire bushing

1. Connect the 2 red wires (B) together using a UL listed wire connector.
2. Connect the green (or bare) cooktop cable wire (C) to the white (neutral) wire (F) in the junction box using a UL listed wire connector.
3. Connect the 2 black wires (H) together using a UL listed wire connector.
4. Install junction box cover.

PRODUCT OPERATION
Theory Of Induction Cooking

Understanding The Makeup Of A Magnet

Metals are available to us in many different shapes and make-up. Copper, Cast Iron, Tin, Aluminum, Stainless steel and so on. They are all made up of positive and negatively charged electrons that distinguish metals from each other. In some materials it is possible for the positive and negatively charged electrons to end up more or less aligned. These electrons tend to separate into distinct areas of the material, called "domains". So, in some metals, all the positively charged electrons are grouped together and the negatively charged electrons are in another domain, separated from the each other. This is the makeup of a magnet. Because the metal has defined positive and negative domains, it is possible to make the two metals attract each other. This is done by using the positively charged electrons of one metal and placing them in contact with the negatively charged electrons of another piece of metal. Let's remember, at one time in science class, we were taught that opposites attract. On the other hand, if you try to stick the metals together by using the positively charged side of one metal and the positive side of a second piece of metal, they will resist each other and make it impossible to put them together. Try it with two magnets, in one direction the magnets stick together because the negative electrons of one magnet are attracted to the positive charged electrons in the other magnet. But if you try to put the magnets together with the positive side of one magnet and the positive side of another magnet, it can't be done.

This is the theory behind induction cooking. We need to use the electrons in metals to create movement, friction and resistance causing heat. We talk about using ferromagnetic pots and pans to cook with induction. What is ferromagnetic metal? Metals with randomly arranged positive and negatively charged electrons in no particular order (as shown below), providing the characteristic of a magnet but have no net magnetic ability. Because of that make-up, a ferromagnetic metal will attract to both the positive and the negative sides of a magnetic, meaning a magnet will attract or stick to ferromagnetic metal, but the ferromagnetic material will not attract other metals by itself. If we provide a stimulus to ferromagnetic metals, and arrange the electrons so that they form domains, ferromagnetic pots and pans have the potential to work very well within a magnetic field.

Let's look at the set-up. The system will include a glass cooktop, Induction coils, a frequency converter, an insulator between the coils and glass cooktop and a ferromagnetic piece of cookware.
You can see in the ferromagnetic pan the positive and negative electrons move around freely. By providing a very strong electrical stimulus into the system (240 VAC), we can arrange the electrons in the pan to have the characteristics of a magnet. Remember, opposites attract and by providing voltage, the positive and negative charges in the induction coil create a tremendous magnetic field.

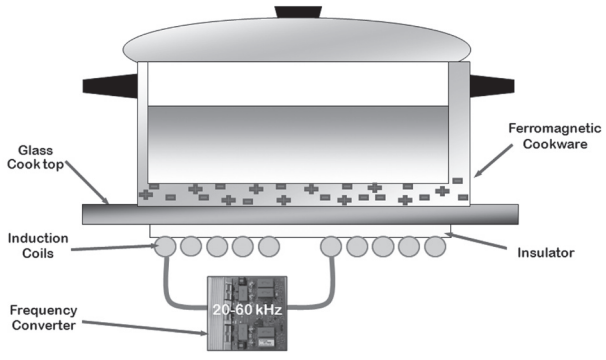


Figure 1

By providing a very strong electrical stimulus into the system (240 VAC), we can arrange the electrons in the pan to have the characteristics of a magnet.

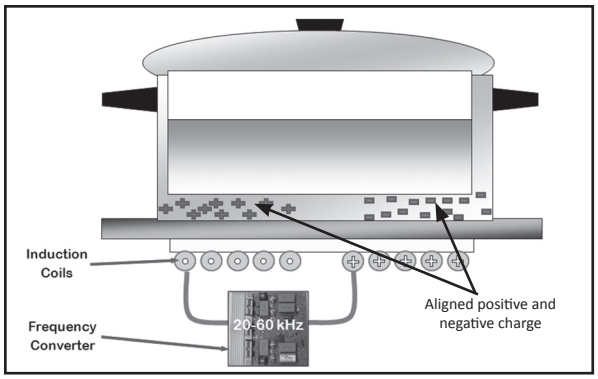


Figure 2

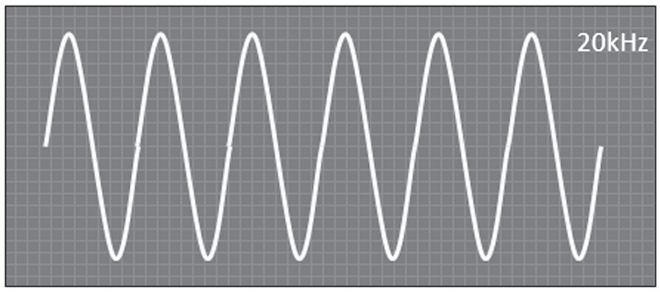
Remember,
opposites attract and by providing voltage, the positive and negative charges in the induction coil create a tremendous magnetic field.

The electrical circuit from our house supply is 240 VAC and 60 Hz. Meaning the positive and negative electrons, of a sine wave, shift back and forth 60 times a second. Now how do we make this movement happen quicker? We use a frequency converter to step up the 60 Hz frequency from our home power supply to between 20 and 60 THOUSAND Hz . Meaning now the positive and negative electrons in the coil alternate back and forth 20 THOUSAND times per second. What do you think the electrons in the pan are doing? (creating heat very quickly).

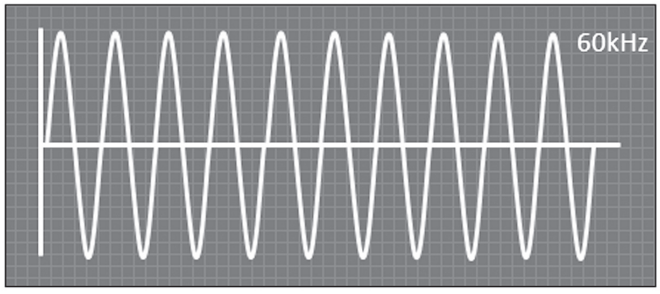
Induction cooking and the movement created in the cookware performs better at the lower frequency of 20KHz. Changing the frequency upwards to 60KHz reduces the efficiency of induction operation. This is how we regulate the performance between a high, medium and low setting at the cooktop. By speeding up the alternating current in the induction coil, the electrons in the pan will move very quickly and provide instant heat to cook food. This magnetic field that we produced works in the 2-3cm of the bottom of the cookware, creating heat in just the bottom of the cookware. You always see the dollar bill trick where they put a dollar bill between the cooktop glass and the pan being heated, well now you know how it works. The paper money does not contain the electrons (like in metal) to stimulate and will not provide any heat. Same thing with the glass cooktop, the glass doesn't get hot (except from the heat provided from the hot cookware) because it doesn't contain the material makeup that the metals do to stimulate movement and friction in the glass.

The range of the frequency converter is 20 to 60 kHz.

Induction cooking reacts better with a lower frequency, so 20 kHz produces the most energy.



60 KHz is not as efficient an operation as 20 KHz, so as the frequency rises the efficiency of the induction operation decreases.



Advantages Of Induction Cooking

Faster Cycle Time

- Heat is developed directly and instantly within 1 second inside the pot or pan, allowing a much quicker startup than other heating equipment. Heating process times can be dramatically reduced & production output can be significantly increased.
- With induction cooking the heat level is every bit as instantaneous, and as exact, as with gas, yet with none of the many drawbacks of gas (carbon monoxide, loss of flame etc.). Induction elements can be adjusted to

increments as fine as the cooking utensil cares to supply, just like gas, and—again very important to serious cooks—such elements can run at as low a cooking-heat level as wanted for gentle simmering and melting (something even gas is not always good at).

High Thermal Efficiency And Increased Profitability

- This energy-efficient process converts up to 90% of the energy expended into useful heat to reduce utility costs. (With gas ranges up to 60% of the heat is normally wasted through indirect gas combustion.) Stand-by losses are reduced to a minimum.
- The costs of exhaust duct installation and air conditioning running costs are saved.
- As mentioned earlier, induction cooking energy is supplied directly to the cooking utensil by the magnetic field; thus, almost all of the source energy gets transferred to that cooking utensil. With gas or conventional electric elements (including halogen), the energy is first converted to heat and only then directed to the pot or pan with a lot of that heat going to waste heating up your kitchen instead of heating up your food. (As a comparison, 40%—less than half—of the energy in gas gets used to cook, where as with induction 84% percent of the energy in the electricity used gets used to cook (and the rest is not waste heat as it is with gas). There are two important heat-related consequences of that fact:

Cooler kitchens:

- Of course the cooking vessel and the food itself will radiate some of their heat into the cooking area—but compared to gas or other forms of electrically powered cooking, induction makes for a much cooler kitchen.

Cool stove top:

- The stove top itself barely gets warm except directly under the pan (and that only from such heat as the pan bottom transfers). No more burned fingers, no more baked-on spills, no more danger with children around.

Environmentally Sound

- Induction heating is a clean, non-polluting process. It produces much less smoke or waste heat to alter the surrounding environment.
- It is an obvious but still very important fact that induction cooktops are powered by electricity. Not every home actually has a gas pipeline available to it—for many, the only “gas” option is propane, with the huge propane tank and regular truck visits. But everyone has clean, silent, ever-present electricity.
- Burning gas has byproducts that are vaporized, but eventually condense on a surface somewhere in the vicinity of the cooktop. Electrical cooking of any kind eliminates such byproducts.

User-Friendly

- Working conditions are improved with the absence of smoke and heat produced by heating equipment. You can touch the outer casing without getting burned.
- If the electricity supply to your home is interrupted, you will be unable to cook; gas supplies can be interrupted, too, but such interruptions are normally somewhat less likely than electricity interruptions. If the electricity where you are frequently goes out for hours at a time, the loss of cooking ability may be an issue for you.

Pinpoint Accuracy

- Power input is precisely controlled to achieve the exact temperature required for heating. Heat is developed directly inside the pot or kettle or cooktop.
- With gas, when you adjust the element setting, the energy flow adjusts instantly.
- But with induction cooking the heat level is every bit as instantaneous, and as exact, as with gas, yet with none of the many drawbacks of gas. Induction elements can be adjusted to increments as fine as the cooker maker cares to supply, just like gas, and—again very important to serious cooks—such elements can run at as low a cooking-heat level as wanted for gentle simmering and melting (something even gas is not always good at).
- Moreover, gas—induction's only real competition—has special risks of its own, not all of which are as well known as they perhaps should be. While the risk of a gas flame, even a pilot light, blowing out and allowing gas to escape into the house is relatively small, it does exist.

Maximum Repeatability

- With modern induction heating equipment, the heating pattern is always the same for a given set-up, cycle after cycle and day after day.

Noises that are Common to the Normal Operation of Induction Cooktops

Induction heating technology is based on the capacity that certain metal materials have to vibrate when they are subject to high frequency waves.
Under certain circumstances, these vibrations may make certain sounds of a low volume due to the following:

- **Low tone noise,** similar to that of a transformer: It occurs when cooking at high power levels. It is due to the enormous amount of energy that the cook top is supplying to the container. It disap pears or attenuates as the power level used is reduced.
- **Soft whistling:** They occur when the container is empty. They disappear or weaken when water or the food to be cooked is added.
- **Crackling:** This kind of noise may occur in containers composed of layers of different materials. The noise is due to the vibration in the separation zones between the various layers of material. This noise is proper to the container. It can change ac cording to the quantity and type of food that is cooked.
- **Sharp whistling (beeps):** They occur basically with containers composed of different layers of materials when two adjacent cooking zones are started up at the same time and at maximum power. They disappear or weaken when the power is reduced.
- **Intermittent clicks:** They are noises caused by the commutations of the control electronics, above all when low power levels are selected.
- **Fan noise:** In order to control the cor- rect operation of the electronics, they must work at a controlled temperature. To achieve this, the cooktop is equipped with fans that work to cool the cooktop when- ever it is in operation. The fan can also continue operating when the cooktop is

turned off after being used if the detected temperature continues to be high.

NOTE: All these noises are normal and inherent to induction technology, and they are not a sign of any breakdown.

The noises that occur with greatest frequency are those with containers that have a “sandwich” type base.

Overview of Induction Cookware

- All pots and pans with a ferromagnetic base are valid for induction.
- Only containers that have a base where a magnet will stick.

Pots and Pans good for Induction Cooking

- Enamelled steel pots and pans.
- Cast iron pots and pans.
- Special stainless steel utensils for induction cooking.

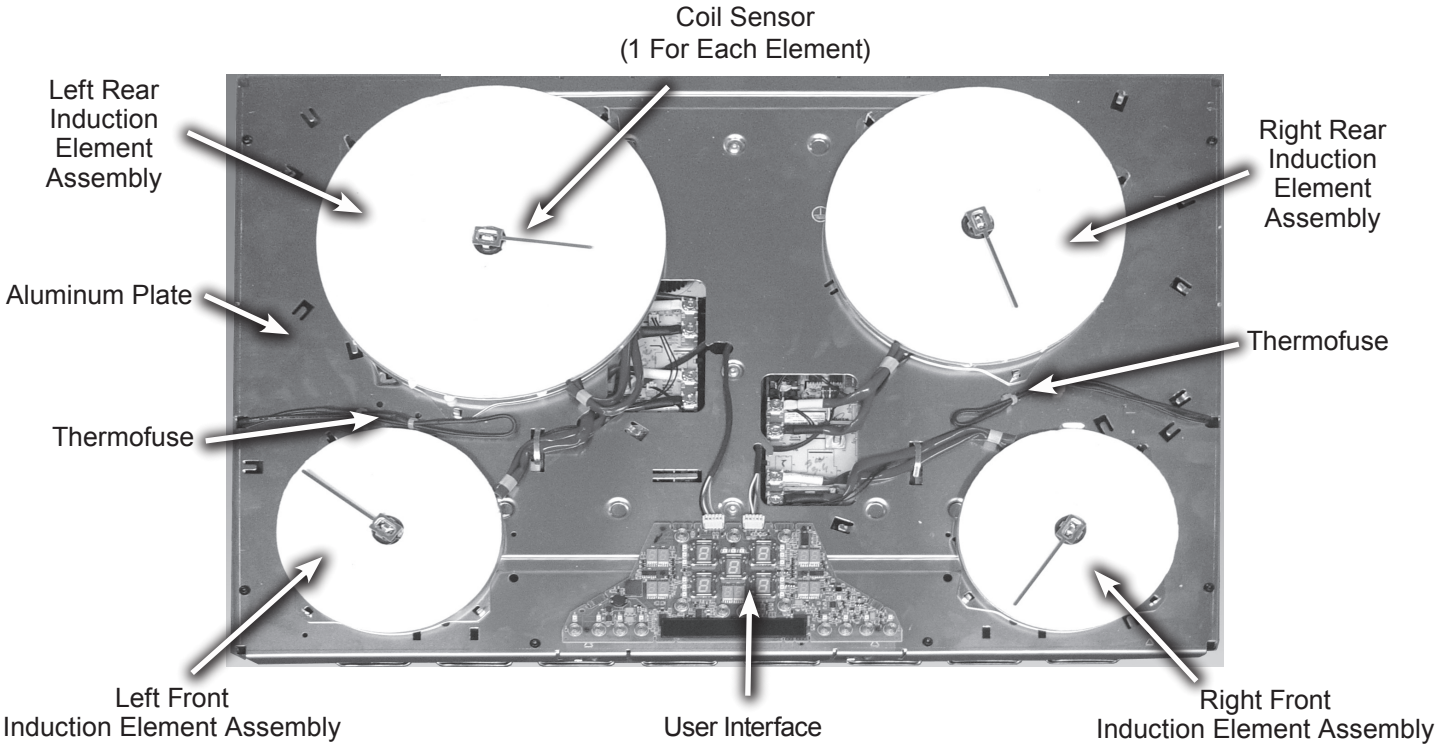
Pots and Pans not good for Induction Cooking

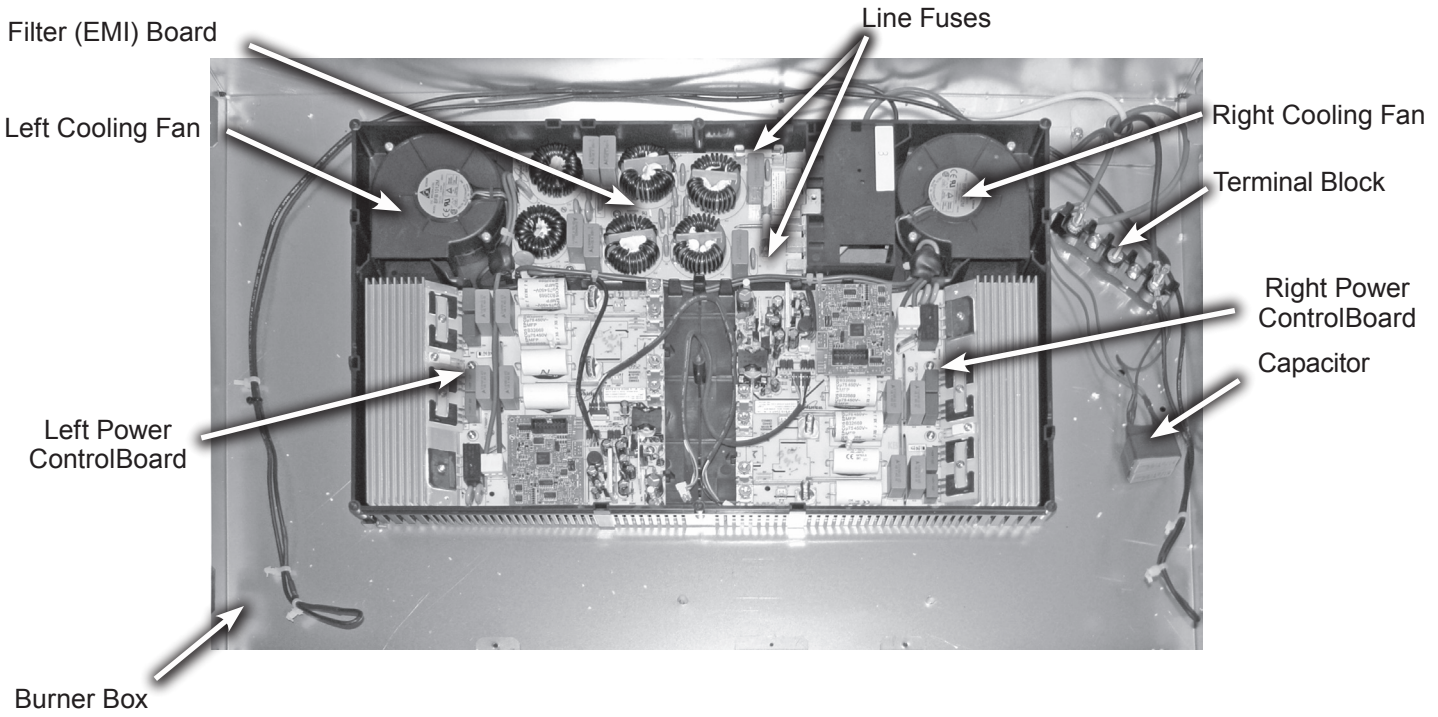
- Non-ferromagnetic or non-metallic materials.
- Aluminum pots and pans.
- Copper pots and pans.
- Brass pots and pans.
- Standard stainless pots and pans.
- Glass (“Pyrex”) containers.
- Earthenware pans.

—NOTES—

COMPONENT ACCESS

Component Locations





Removing the Cooktop Glass

⚠WARNING

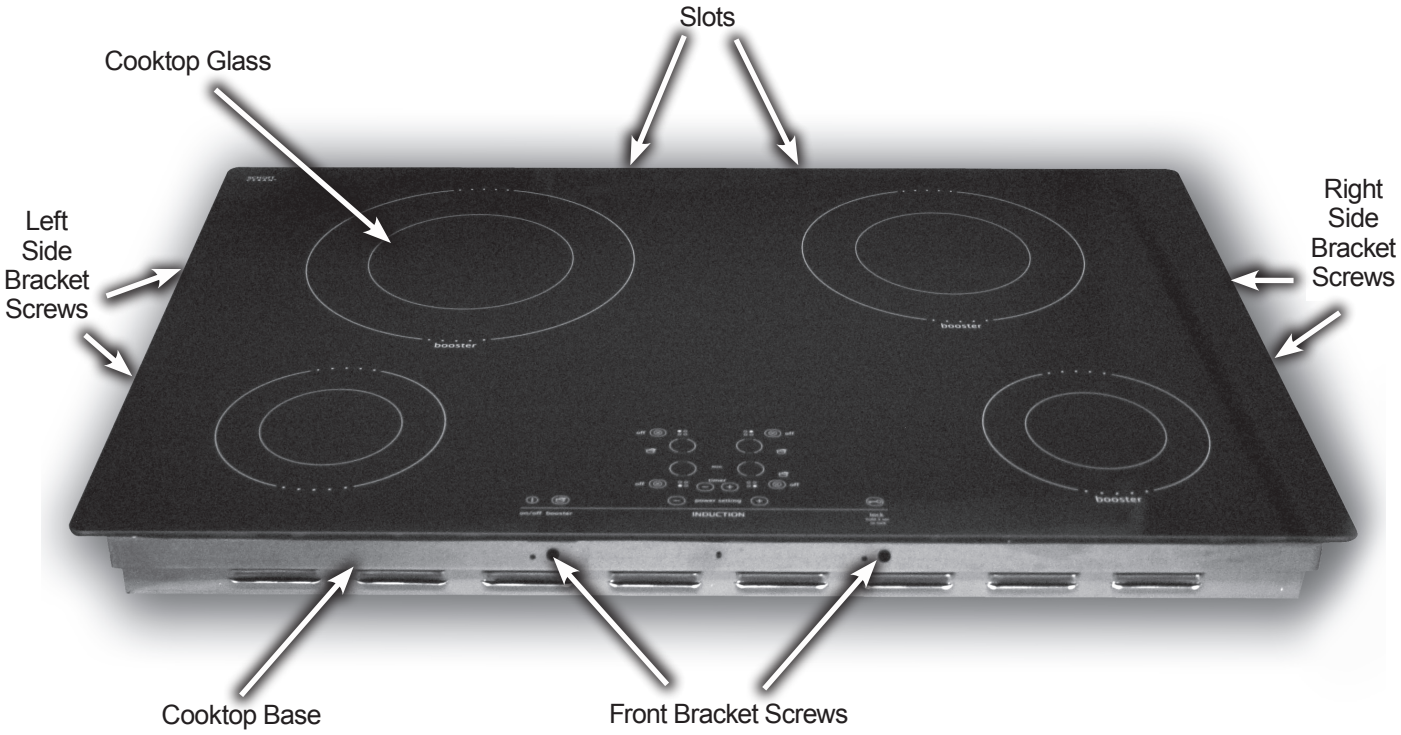
Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Unplug cooktop or disconnect power.
2. Remove the cooktop from its mounting location, (see “Installation Instructions” in Section 2). Position the cooktop so that you can access the bracket screws below the cooktop glass.
3. Remove the (6) T-20 Torx® head screws from the front, and side ceramic glass brackets.
4. Lift and remove the ceramic glass from the cooktop base



Removing the User Interface

⚠WARNING

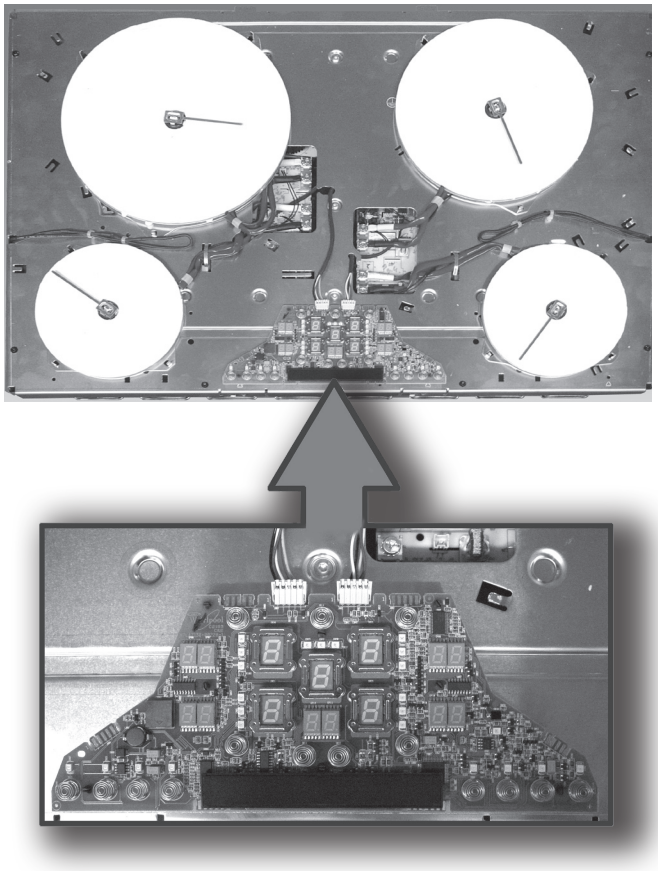
Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Unplug cooktop or disconnect power.
2. Remove the cooktop glass from the cooktop (see page 4-2 for the procedure).



User Interface

3. Gently pull up on edges of User Interface board to release holder tabs, raise the user interface, and remove the board from the tab locations, see figure 1.

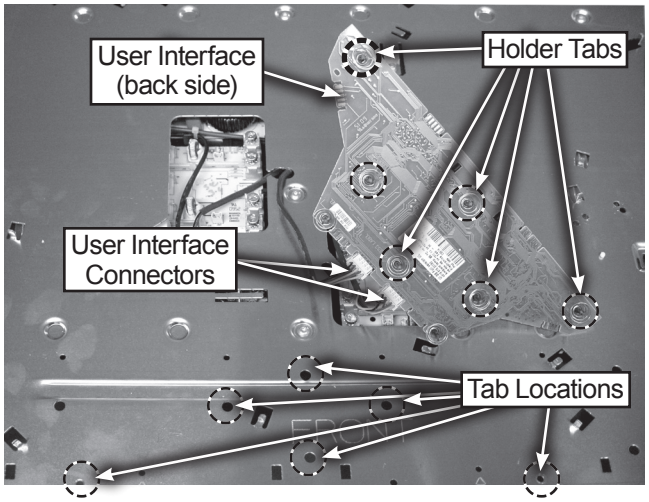


Figure 1

4. Remove the two edge connectors from the top of the User Interface.

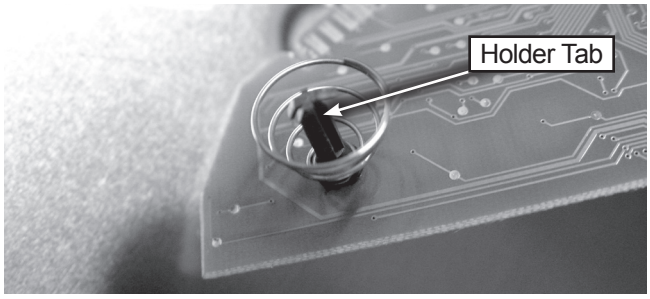


Figure 2

5. When replacing the User Interface, be sure to engage the holder tabs into the tab location positions, see figure 1. Holder tabs are held in place by the pressure of the glass top and isolated by the springs surrounding each tab, see figure 2.

Removing an Induction Element

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Unplug cooktop or disconnect power.
2. Remove the cooktop glass from the cooktop (see page 4-2 for the procedure).

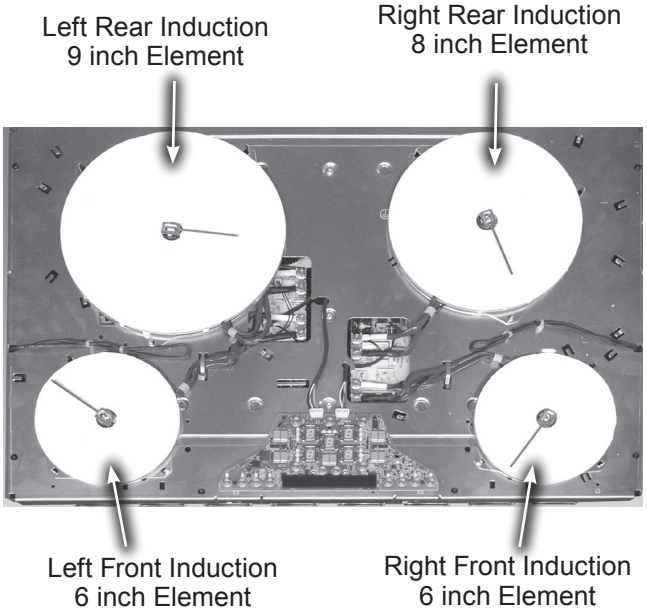


Figure 1

3. The elements are connected to the right and left power boards by means of two centrally located openings in the aluminum cover plate, see figure 2. To remove an element, loosen the connector screw for each of the 2 leads on the element.

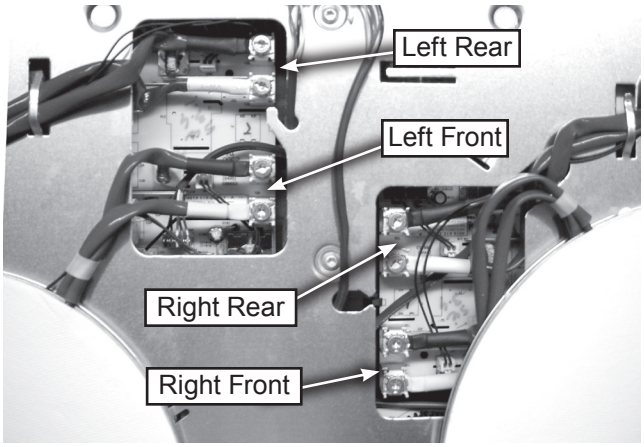


Figure 2

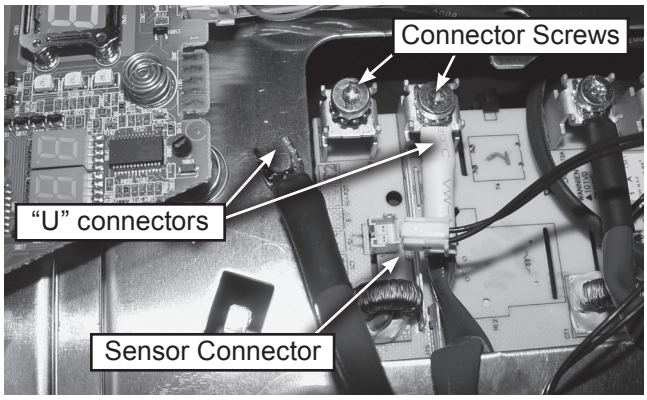


Figure 3

4. Slip the "U" connector out. Disconnect the sensor connection from the P.C. board, and remove the element, see figure 3.

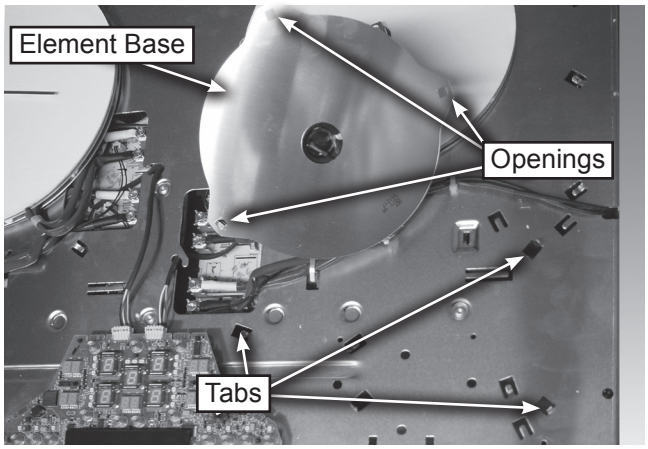


Figure 4

5. The elements are located on the cooktop by a series of tabs that engage corresponding openings in the element base. Remove the element by lifting the element up off of the tabs, see figure 4.

Removing a Cooling Fan

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Unplug cooktop or disconnect power.
2. Remove the cooktop glass.
3. Remove elements.
4. Remove 11 screws that mount the aluminum plate, and 1 ground screw. Be sure to replace the ground screw when reassembling, see figure 1.

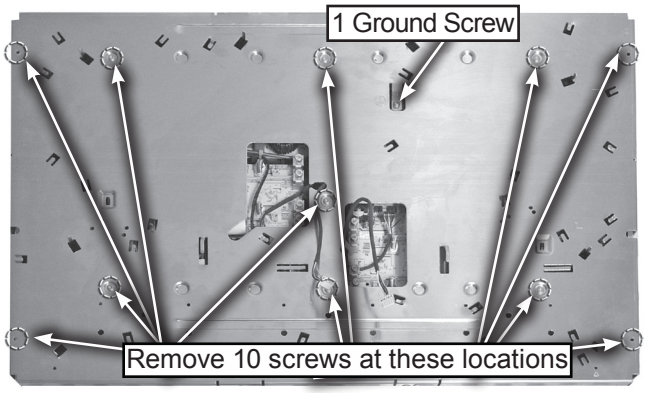


Figure 1

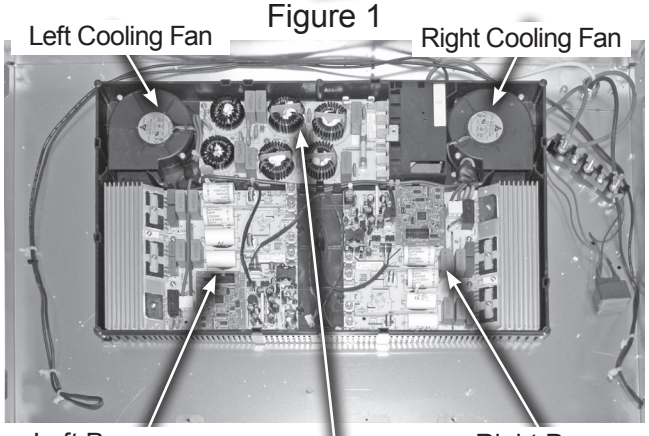


Figure 2

5. a) Disconnect the 3-wire fan connector from power control board, see figure 3.
   b) Remove two screws from the cooling fan and lift the fan from the power control board, see figure 4.

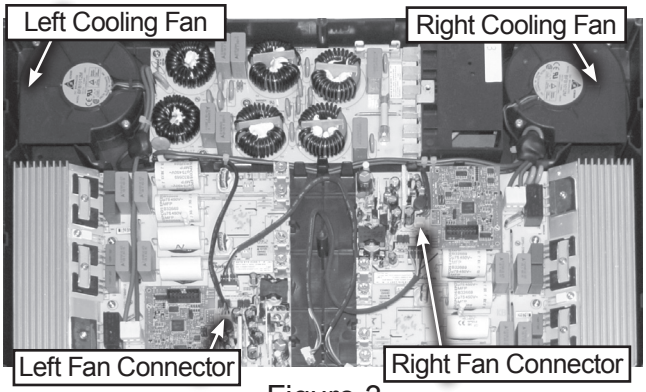


Figure 3

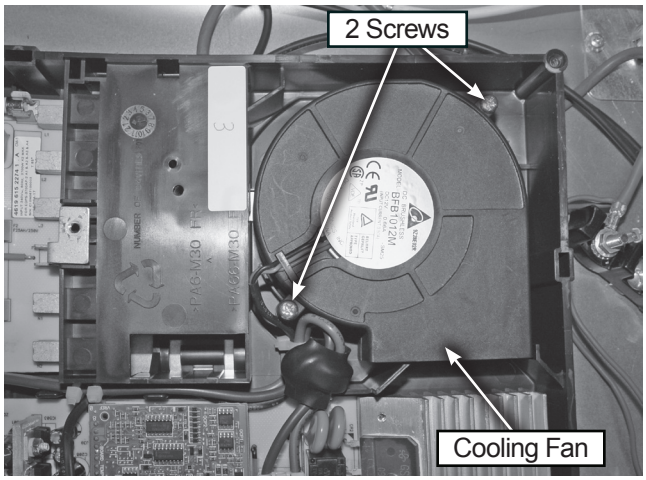


Figure 4

Removing, Power Control Board, Fuses and EMI Board

⚠WARNING

Electrical Shock Hazard

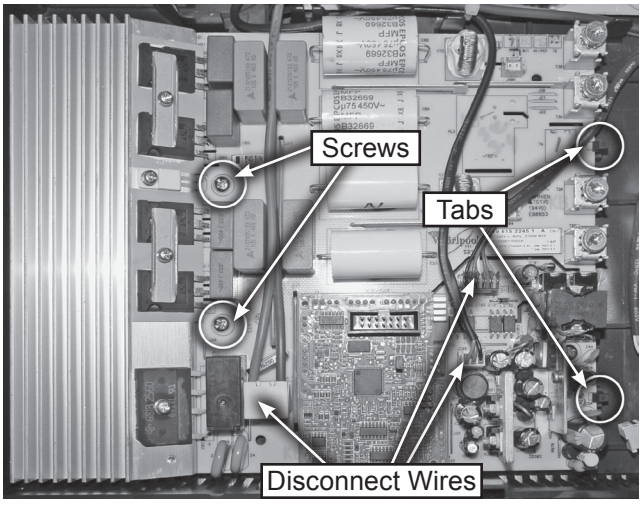
Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

To remove a Power Control board:

1. a) Unplug cooktop or disconnect power.
   b) Remove the cooktop from installation.
   c) Remove cooktop glass.
   d) Remove the aluminum plate.
   e) Disconnect the wires from the power control board terminals.
   f) Remove 2 screws.
   g) Slide the board from under the two tabs on the interior side of the board and lift the power control board from its holder, see figure 1. (left board shown).



Power Control Board
Figure 1

To replace the fuses on the Filter (EMI) board:

1. a) Unplug cooktop or disconnect power.
   b) Remove the cooktop from installation.
   c) Remove cooktop glass.
   d) Remove the elements.
   e) Remove the aluminum plate.
   f) Remove and replace fuses as needed, see figure 2.

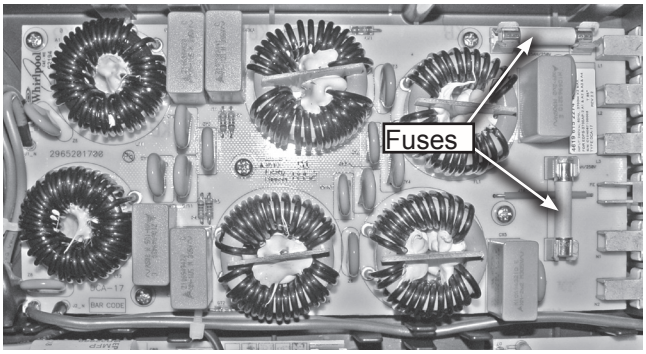
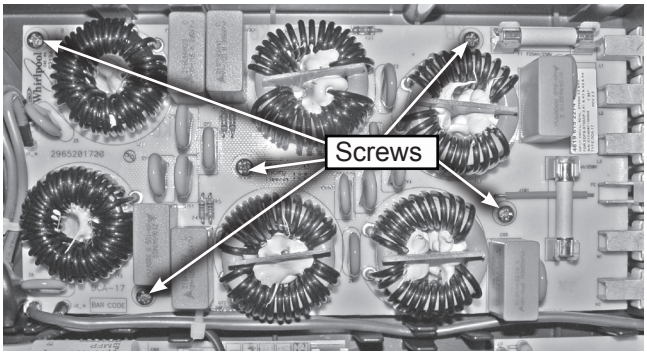


Figure 2

To remove the EMI (Filter) Board:

1. a) Unplug cooktop or disconnect power.
   b) Remove the cooktop from installation.
   c) Remove cooktop glass.
   d) Remove the elements.
   e) Remove the aluminum plate.
   f) Disconnect the wires from the EMI (filter) board terminals, see figure 1.
   g) Remove 5 screws.
   h) Lift the EMI (filter) board from its holder, see figure 3.



EMI (Filter Board)
Figure 3

Terminal Block, Capacitor, Shunt Clip and Thermofuses

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

To access the terminal block, shunt clip and thermofuses:

1. Unplug cooktop or disconnect power.
   a) Remove the cooktop from installation.
   b) Remove cooktop glass.
   c) Remove the elements
   d) Remove screws and lift the aluminum plate.
   e) The terminal block, shunt clip and thermofuses are now accessible, see figure 1.

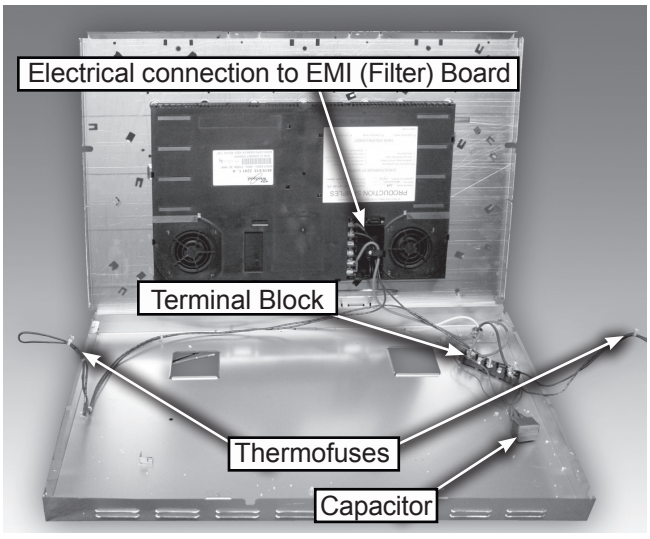
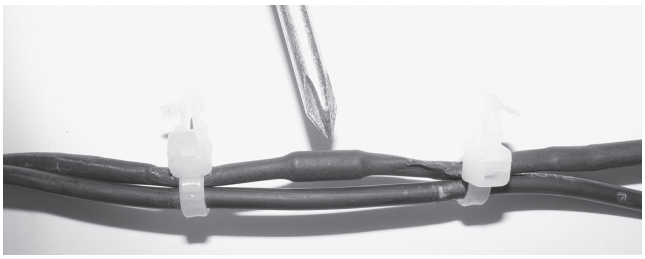
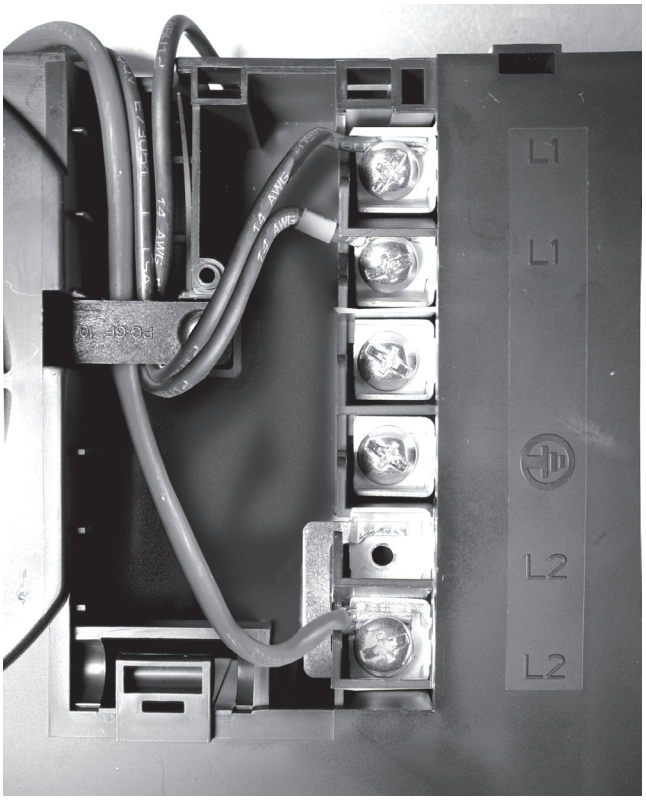


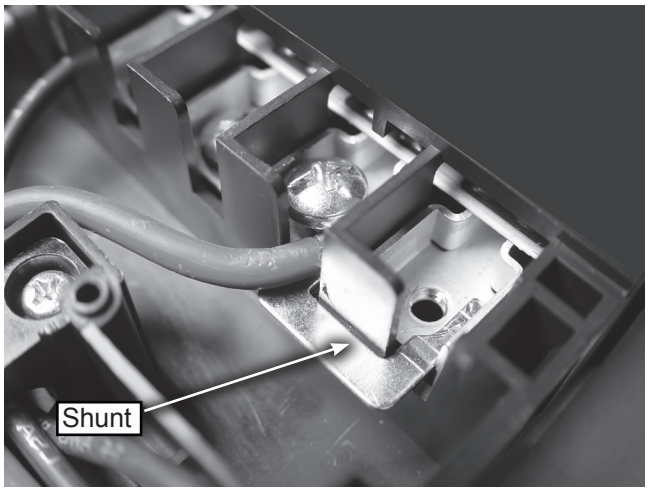
Figure 1



Thermofuse



Electrical connection to EMI (Filter) Board



—NOTES—

COMPONENT TESTING

Before testing any of the components, perform the following checks:

- The most common cause for control failure is corrosion on connectors. Therefore, disconnecting and reconnecting wires will be necessary throughout test procedures.
- All tests/checks should be made with a VOM or DVM having a sensitivity of 20,000 ohms-per-volt DC, or greater.
- Check all connections before replacing components, looking for broken or loose wires, failed terminals, or wires not pressed into connectors far enough.
- Resistance checks must be made with wiring harness or connectors disconnected.

FOR SERVICE TECHNICIAN'S USE ONLY

⚠ DANGER

Electrical Shock Hazard

Only authorized technicians should perform diagnostic voltage measurements. After performing voltage measurements, disconnect power before servicing. Failure to follow these instructions can result in death or electrical shock.

⚠ WARNING

Electrical Shock Hazard

Disconnect power before servicing. Replace all parts and panels before operating. Failure to do so can result in death or electrical shock.

Voltage Measurement Safety Information

When performing live voltage measurements, you must do the following:

- **Verify the controls are in the off position so that the appliance does not start when energized.**
- **Allow enough space to perform the voltage measurements without obstructions.**
- **Keep other people a safe distance away from the appliance to prevent potential injury.**
- **Always use the proper testing equipment.**
- **After voltage measurements, always disconnect power before servicing.**

Component Testing (continued)

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Component Testing Chart

Location on the cooktop	Check points	Results Voltage
EMI filter board	J1 - (L) (N)	From 208VAC to 240 VAC -60Hz
Power control board (PC) from Filter (EMI) Board Left and right	J1 - (L) (N)	From 208VAC to 240 VAC -60Hz
Power control board (PC) to blower fan Left and right	J205 - (00) - (22) J205 - (00) - (60)	From 0VDC to 12VDC
Power control board (PC) to coil sensor Left and right	J604 - (1) - (2) J605 - (1) - (2)	+5VDC 0V +10.5V
Power control board (PC) to the User Interface	J806 - 00 J806 - 99 J806 - 44 J806 - 88 J806 - 22 J806 - 99 [0VDC, Neutral pin])	0VDC From 0VDC to 12VDC

To Enter Manual Configuration Mode:

NOTE: This menu is accessible only during the first minutes after the cooktop is plugged in.

1. Remove the key-lock functionality by pressing the Control Lock button.
2. Press the following keys sequentially (a beep will sound after each key press): Timer “-”, Timer “+”, Timer“-”, Timer“+”, Control Lock. After the key stroke combination is pressed, a “CO” will appear on the display.
3. Press the Control Lock button. A “OO” will appear on the display.
4. Configure the cooktop by choosing one of the following numbers, see chart.
5. Press the Control Lock button to confirm the configuration. The configuration will then be downloaded into the cooktop. This process will last a few seconds. The configuration number chosen will blink on the display.
6. The cooktop is ready to use.

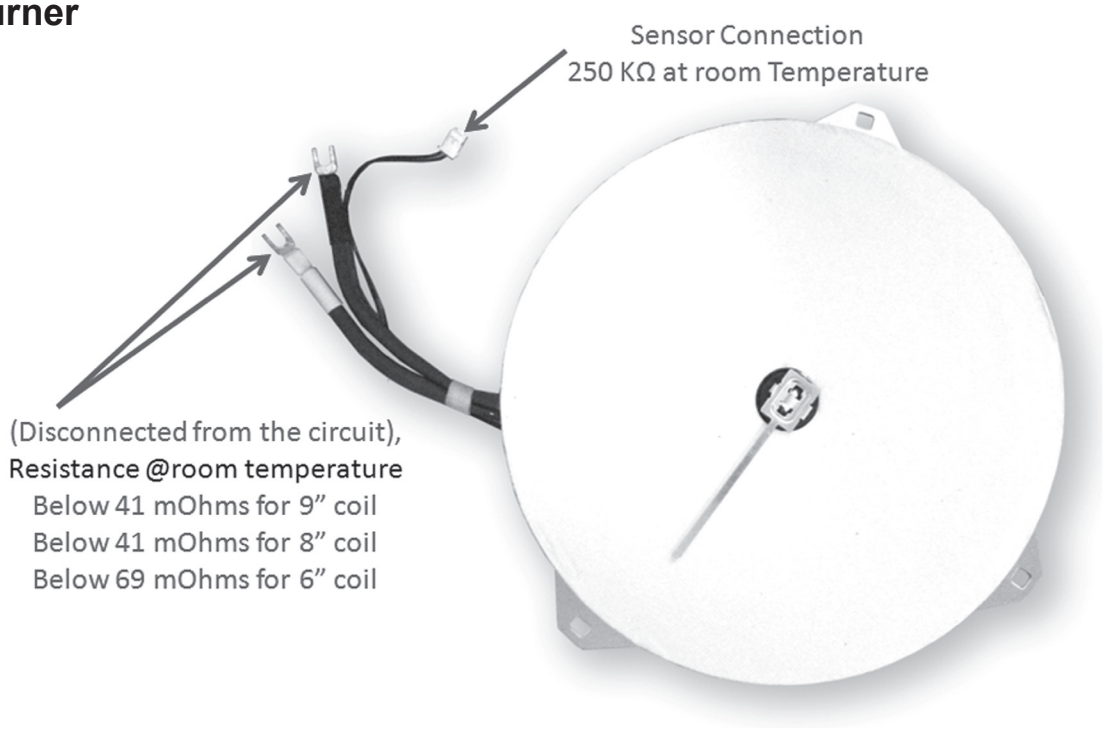
Use the Timer buttons to scroll between the numbers on the display, moving sequentially and beginning at “00.” The Timer“+” button will increase the number by 1, and the Timer“-” will decrease the number by one.

Reconfiguration Chart

Configuration Number	Cooktop Model
20	ICI500X*01
21	GCI3061X*01
22	KICU500X**01
23	KICU509X*
24	JIC4430X*
25	JIC4536X*
26	KICU569X*
27	GCI3061X*00
28	KICU500X**00
29	ICI500X*00
*- All colors	
01 - 01 or greater	

Component Testing (continued)

Coil Burner

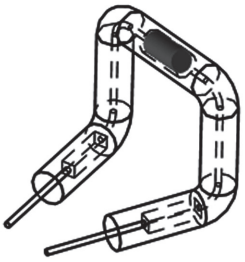

Sensor Connection
250 KΩ at room Temperature
(Disconnected from the circuit),
Resistance @room temperature
Below 41 mOhms for 9" coil
Below 41 mOhms for 8" coil
Below 69 mOhms for 6" coil

The resistance of the coil differs according to the size of the coil.

Coil Sensor (S1)

Coil Sensor		
Temp ^{0}F	Temp ^{0}C	KΩ Resistance
32	0	806
72	22.2	250
100	37.8	130
200	93.3	17
482	250	0

Fails at 482^{0}F (250^{0}C)

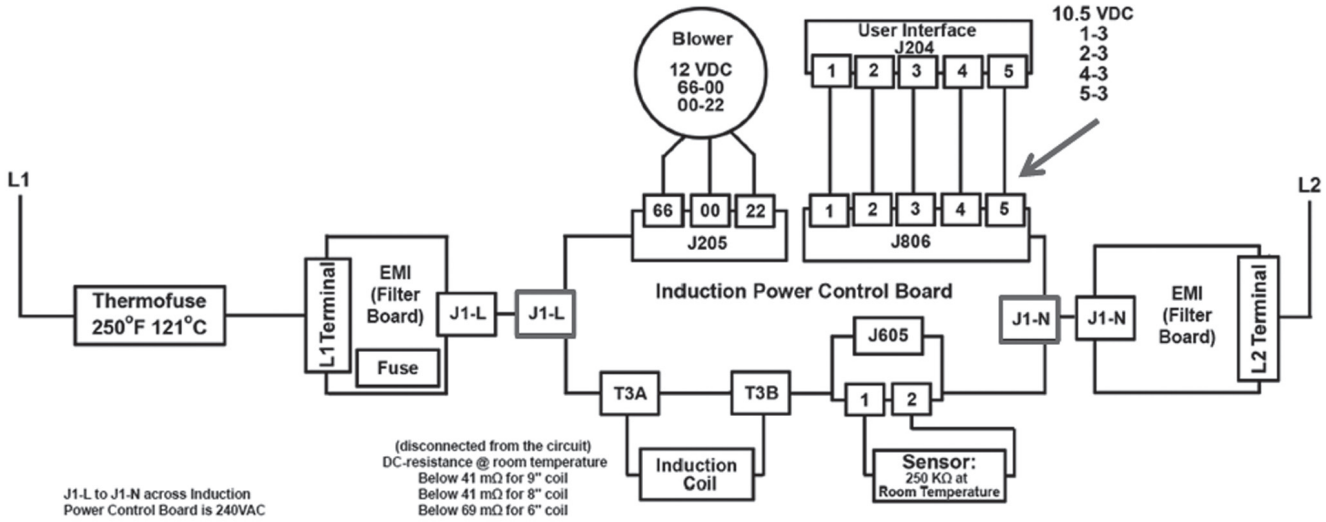


Failure/Error Code F36

This sensor reduces power output from the burner before it completely fails.
Coil Sensor: begins at 400°F (210°C) to gradually reduce the power output of the element, reduces the power output down to zero power at 440°F (226°C), sensor opens and completely fails at 482°F (250°C).

Component Testing (continued)

Strip Circuit



This is a simplified strip circuit of the operation of a typical burner. You can see what components are working during the operation of a burner.

TROUBLESHOOTING
For Service Technicians Only

Before testing any of the components, perform the following checks:

- The most common cause for control failure is corrosion on connectors. Therefore, disconnecting and reconnecting wires will be necessary throughout test procedures.
- All tests/checks should be made with a VOM or DVM having a sensitivity of 20,000 ohms-per-volt DC, or greater.
- Check all connections before replacing components, looking for broken or loose wires, failed terminals, or wires not pressed into connectors far enough.
- Resistance checks must be made with power cord unplugged from outlet, and with wiring harness or connectors disconnected.

FOR SERVICE TECHNICIAN'S USE ONLY

⚠ DANGER

Electrical Shock Hazard
Only authorized technicians should perform diagnostic voltage measurements. After performing voltage measurements, disconnect power before servicing. Failure to follow these instructions can result in death or electrical shock.

⚠ WARNING

Electrical Shock Hazard
Disconnect power before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.

Voltage Measurement Safety Information

When performing live voltage measurements, you must do the following:
- **Verify the controls are in the off position so that the appliance does not start when energized.**
- **Allow enough space to perform the voltage measurements without obstructions.**
- **Keep other people a safe distance away from the appliance to prevent potential injury.**
- **Always use the proper testing equipment.**
- **After voltage measurements, always disconnect power before servicing.**

Troubleshooting (continued)
Failure/Error Codes

If all the lights on the User Interface are Off and there is no response from the cooktop, complete the following steps:

1. Disconnect power.
2. Check the continuity between L2 on the terminal block and both L2 terminals on the EMI filter board. If there is no continuity on one or both of these 2 lines, change the thermofuse harness that is blown.
3. Replace all parts and panels before operating.
4. Reconnect power.
5. Check that it is working. If it is not, go to Step 6.
6. Disconnect power.
7. Check the continuity of the fuses on the EMI board. If one or more of the fuses is blown, replace with a new fuse.
8. Replace all parts and panels before operating.
9. Reconnect power.
10. Check that it is working. If it is not, go to Step 11.
11. Disconnect power.
12. Change both control boards.
13. Replace all parts and panels before operating.
14. Reconnect power.
15. Reconfigure the cooktop following the directions in “Manual Configuration Mode.”
16. Check that it is working. If it is not, go to Step 17.
17. Disconnect power.
18. Change the User Interface.
19. Replace all parts and panels before operating.
20. Reconnect power.
21. Reconfigure the cooktop following the directions in “Manual Configuration Mode."

Troubleshooting (continued)

Failure Codes

Failure/Error Code Types

There are 3 types of failures associated with the cooktop. The description of these failures and the impact they will have on the rest of the cooktop are listed in the following:

Type 1

This is showing a TYPE 1 failure code…. Only one burner affected. In this case Burner (coil) sensor is not working. Only the left rear burner is affected. All other burners can be used.

Type 2

Type 2 failure codes– come from the control board, there could be some exceptions. This failure affects both burners associated with that power control board. Customer can use the burners on the other power control board.

Type 3

Type 3 failure codes come from the user interface. This failure disables the entire cooktop, all burners are switched off by the user interface.

Troubleshooting (continued)

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Failure/Error Codes

Service Code Shown on Display	Failure Description	Type of Failure	Repair Suggestions
F-12	Coil under current	Type 1	1. Check for the correct connections at T2A - T2B or T3A - T3B on the power control board (whichever connection the burner is plugged into) by completing the following steps. 2. Disconnect power. 3. Replace the burner coil. 4. Replace all parts and panels before operating. 5. Reconnect power. 6. Reconfigure the cooktop following the directions in "Manual Configuration Mode." 7. Check for proper operation. 8. If everything operates, end service. If error code still appears, disconnect power and go to Step 9. 9. Replace the power control board. 10. Replace all parts and panels before operating. 11. Reconnect power. 12. Reconfigure the cooktop following the directions in "Manual Configuration Mode."
F-21	Supply power frequency	Type 2	1. Disconnect power. 2. Replace the power control board. 3. Replace all parts and panels before operating. 4. Reconnect power. 5. Reconfigure the cooktop following the directions in "Manual Configuration Mode." 6. If the issue is not fixed, contact a qualified electrician to verify the frequency of the home power supply is 60 Hz.
F-25	Stuck fan on power control board (Right or left side fan, depending on which side of the display the failure is on.)	Type 2	1. Disconnect power. 2. Check that the cooling fan connector is firmly plugged in. 3. Replace all parts and panels before operating. 4. Reconnect power. 5. If the issue is not fixed, disconnect power. 6. Replace the cooling fan. 7. Replace all parts and panels before operating. 8. Reconnect the power. 9. If the issue is not fixed, disconnect power. 10. Replace the power control board. 11. Replace all parts and panels before operating. 12. Reconnect power. 13. Reconfigure the cooktop following the directions in "Manual Configuration Mode."

Troubleshooting (continued)

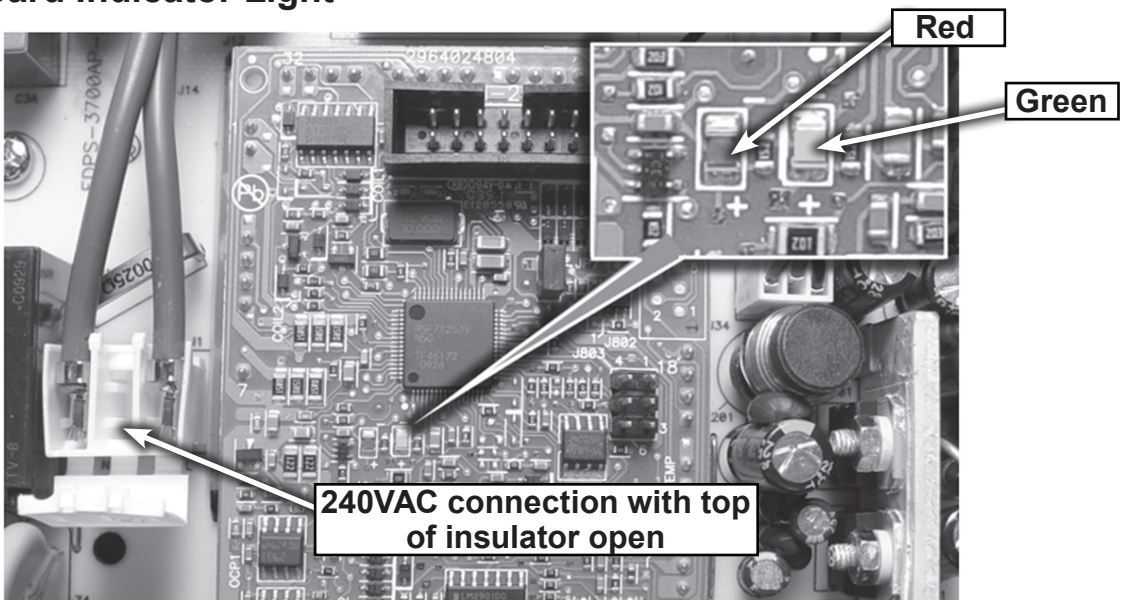
Service Code Shown on Display	Failure Description	Type of Failure	Repair Suggestions
F-36, F37	Temperature sensor is not working	Type 1	1. Disconnect power. 2. Check that the temperature sensor is between 184,000 Ω - 292,000 Ω at room temperature and is firmly plugged in. If the sensor is not between 184,000 Ω - 292,000 Ω, replace the coil and go to Step 5. If the sensor is between 184,000 Ω - 292,000 Ω and the electrical connection is good, go to Step 3. 3. Replace all parts and panels before operating. 4. Reconnect power and check that the coil is working. If it is not working, disconnect power and replace the non-working coil and the control board. 5. Replace all parts and panels before operating. 6. Reconnect power. 7. If the control was replaced in Step 4, reconfigure the cooktop following the directions in "Manual Configuration Mode."
F-40	Power control board failure	Type 1 or Type 2	1. Disconnect power. 2. Check that the cable between the User Interface and the power control board is good and properly connected. If the cable needs repair, fix it. 3. Replace all parts and panels before operating. 4. Reconnect power. 5. Verify if error is still present. If yes, disconnect power. 6. Replace the power control board. 7. Replace all parts and panels before operating. 8. Reconnect power. 9. Reconfigure the cooktop following the directions in "Manual Configuration Mode."
F-42	Power supply	Type 2	1. Check for 240 volts AC at the main incoming power supply connection by completing the following steps. 2. Disconnect power. 3. Connect voltage measurement equipment. 4. Reconnect power and check for 240 volts at J1 L to N, and then J2 L to N at the EMI filter board, and then J1 L to N at both power control boards. If voltage is correct, disconnect power, replace the power control board and go to Step 5. If voltage is not correct, disconnect power and check for an open fuse on the EMI filter board. If there is not an open fuse, have a qualified electrician check the home power supply. 5. Replace all parts and panels before operating 6. Reconnect power. 7. Reconfigure the cooktop following the directions in "Manual Configuration Mode."
F-47	Power supply from power control board to User Interface is missing or WIDE communication error between UI and power control board or an open fuse on the filter board	Type 2	1. Disconnect power. 2. Check that the cables between the User Interface and the power control board are not damaged and are firmly plugged in. 3. Replace all parts and panels before operating. 4. Reconnect power and check that it is working. If it is not working, disconnect power and replace the cables between the User Interface and the power control board. 5. Replace all parts and panels before operating. 6. Reconnect power and check that it is working. If it is not working, go to Step 7. 7. Disconnect power. 8. Check the continuity between black luge at the terminal block and both L2 terminals on the EMI board. If there is not continuity on one or both of these lines, replace the thermofuse harness. 9. Replace all parts and panels before operating. 10. Reconnect power and check that it is working. If it is not working, go to Step 11. 11. Disconnect power. 12. Check the continuity of the fuses on the EMI board. If either of the fuses is blown, replace with a new one. 13. Replace all parts and panels before operating. 14. Reconnect power and check that it is working. If it is not working, go to Step 15. 15. Disconnect power. 16. Change both control boards. 17. Replace all parts and panels before operating. 18. Reconnect power and reconfigure the cooktop following the directions in "Manual Configuration Mode." Check that it is working. If it is not working, go to Step 19.

Troubleshooting (continued)

Service Code Shown on Display	Failure Description	Type of Failure	Repair Suggestions
			19. Disconnect power. 20. Change the User Interface. 21. Replace all parts and panels before operating. 22. Reconnect power and reconfigure the cooktop following the directions in "Manual Configuration Mode."
F-56	Wrong or invalid configuration.	Type 3	1. Disconnect power. 2. Reconnect power. 3. Reconfigure the cooktop following the directions in "Manual Configuration Mode." 4. If the issue is not fixed, disconnect power. 5. Replace the User Interface. 6. Replace all parts and panels before operating. 7. Reconnect power. 8. Reconfigure the cooktop following the directions in "Manual Configuration Mode."
F-58	Wrong or invalid configuration	Type 2	1. Disconnect power. 2. Reconnect power. 3. Reconfigure the cooktop following the directions in "Manual Configuration mode." 4. If the issue is not fixed, disconnect power. 5. Replace the power control board. 6. Replace all parts and panels before operating. 7. Reconnect power. 8. Reconfigure the cooktop following the directions in "Manual Configuration Mode."
F-60	UI does not work	Type 3	1. Disconnect power. 2. Replace the User Interface. 3. Replace all parts and panels before operating. 4. Reconnect the power. 5. Reconfigure the cooktop following the directions in "Manual Configuration Mode."
F-61	Power control board does not work	Type 2	1. Disconnect power. 2. Check that the cables between the User Interface and the power control board are not damaged and are firmly plugged in. 3. Check for 240 Volts AC at the J1 connector on the power control board by completing the following steps. 4. Connect voltage measurement equipment. 5. Reconnect power and confirm voltage reading. If voltage is not correct, disconnect power and have a qualified electrician check the home power supply. 6. If voltage is correct, disconnect power and replace the cable between the User Interface and the power control board. 7. Replace all parts and panels before operating. 8. Reconnect power. 9. Reconfigure the cooktop following the directions in "Manual Configuration Mode."
C-81, C-82	Over temperature	Type 2	Not enough ventilation: Check the cooktop installation according to the Installation Instructions. In particular, check the blower intakes.

Troubleshooting (continued)

Control Board Indicator Light



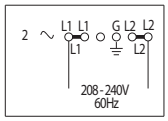
These LEDs are mainly used in the labs and for engineering evaluations. However, the technician should consider a blinking red light as something not properly working inside the system. The green light always blinks whenever power is supplied to the power control board. You can also see the 240 VAC + connection with insulated terminal connections --- the top of the insulator is open in this picture.

—NOTES—

WIRING DIAGRAM

30″ COOKTOP

Main Connection

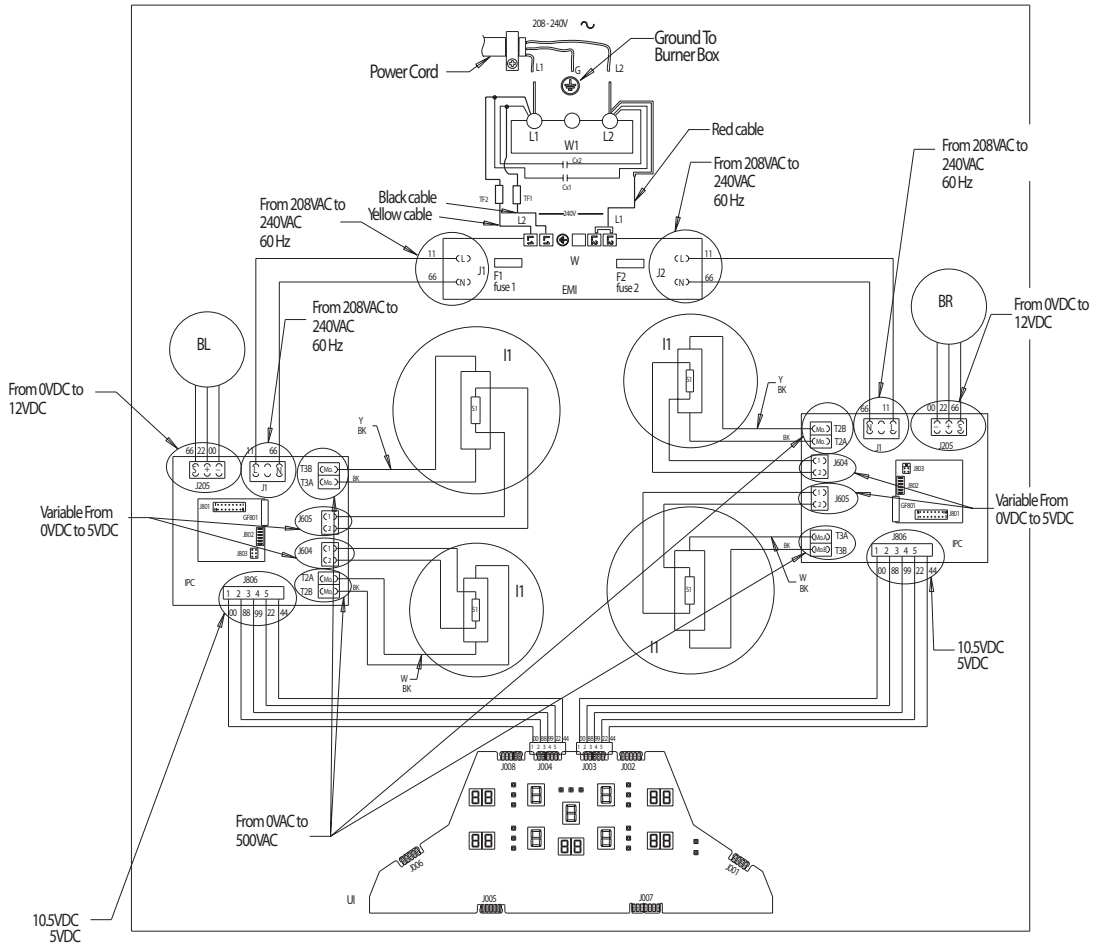


Legend:

J1 - Filter Main Power Connector 1
J2 - Filter Main Power Connector 2
IPC - Induction Power Control Board
EMI - Filter Board
BL - Blower (Left)
BR - Blower (Right)
I1 - Inductor (Single Zone)
S1 - Sensor
UI - User Interface (Touch Control)
W1 - Main Terminal Block
W - Power Housing Terminal Block
TF1 - Thermofuse 1 (250°F [121°C])
TF2 - Thermofuse 2 (250°F [121°C])
Cx1 - Filter Capacitor
Cx2 - Filter Capacitor

Wire Color:
00 - Black
11 - Brown
22 - Red
44 - Yellow
66 - Blue
88 - Blue-Sky
99 - White

Shrinking Sleeve Lead Color:
BK - Black
R - Red
Y - Yellow
G - Green
BU - Blue
W - White
BR - Brown



CONNECTOR NOTE:

J007 - Service connector (SAM) (manufacturing only)	J003 - WIDE 2 connector from IPC2 J004 - WIDE 1 connector from IPC1	J806 - UI connector	J604/J605 - Coil thermistor connector	GF801 - "SAM" Service connector zone (manufacturing only)
J801 - MCU connector (for factory programming only)	J803 - Jumper connector with jumper for IPC board in right position (ref. pos. "B" in assembly module.) No jumper for IPC board in left position (ref. pos. "A" in assembly module)	J205 - Blower connector	T3A/T3B/T2A/ T2B - Induction coil connector	

— NOTES —

PRODUCT SPECIFICATIONS
AND
WARRANTY INFORMATION SOURCES

IN THE UNITED STATES:

FOR PRODUCT SPECIFICATIONS AND WARANTY INFORMATION CALL:

FOR WHIRLPOOL PRODUCTS: 1-800-253-1301
FOR KITCHENAID PRODUCTS: 1-800-422-1230
FOR ROPER PRODUCTS: 1-800-447-6737

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THE TECHNICAL ASSISTANCE LINE: 1-800-832-7174

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FOR TECHNICAL INFORMATION AND SERVICE POINTERS:

www.servicematters.com

IN CANADA:

FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL:

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